

CLAIM AMENDMENTS

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-6. (Cancelled)

7. (Previously Presented) A pellicle operable to transmit light at a particular wavelength, the pellicle comprising:

a frame; and

an amorphous fluoropolymer thin film operable to transmit light at a particular wavelength for projecting a photomask image onto a wafer during a photolithographic process, the thin film including an optical thickness and being coupled to the frame, the optical thickness being greater than a design thickness by an amount less than or equal to approximately one-quarter of the particular wavelength such that transmission of light through the thin film at the particular wavelength at an angle of incidence greater than zero is substantially maximized, the design thickness comprising a thickness of the thin film that maximizes transmission of light incident to the thin film at a normal angle at the particular wavelength;

the thin film formed to cooperate with a photomask including an opening such that when light is transmitted at the particular wavelength through the opening in the photomask, through the thin film and onto the wafer to project an image of the photomask opening onto the wafer, wherein a portion of the transmitted light is diffracted by the photomask opening and passes through the thin film at the angle of incidence greater than zero, the transmission of such portion of light passing through the thin film at the angle of incidence greater than zero being maximized due to the optical thickness of the thin film produces an increased resolution of the projected image on the wafer.

8. (Cancelled)

9. (Previously Presented) The pellicle of Claim 7, further comprising the thin film enabling an associated peak in transmittance for normal incidence light at a wavelength of less than approximately twenty nanometers above the particular wavelength.

10. (Original) The pellicle of Claim 7, further comprising an anti-reflective coating disposed on a top surface and a bottom surface of the thin film.

11. (Original) The pellicle of Claim 10, wherein the anti-reflective coating includes a first refractive index approximately equal to the square root of a second refractive index associated with the thin film.

12. (Previously Presented) The pellicle of Claim 10, further comprising the thin film enabling an associated a peak in transmittance for normal incidence light at a wavelength between approximately one nanometer and approximately twenty nanometers above the particular wavelength.

13. (Previously Presented) The pellicle of Claim 10, wherein the anti-reflective coating includes a thickness between approximately one-quarter of the particular wavelength and approximately one-half of the particular wavelength.

14. (Original) The pellicle of Claim 7, further comprising a plurality of adjoining anti-reflective coatings disposed on a top surface and a bottom surface of the thin film, each of the anti-reflective coatings including a different refractive index.

15. (Cancelled).

16. (Previously Presented) The pellicle of Claim 7, wherein:
the thin film includes a thickness of approximately 855 nanometers; and
the particular wavelength is between approximately 248 nanometers and approximately 436 nanometers.

17. (Previously Presented) A photolithography system for optimizing off-axis transmission of light, comprising:

a photomask including an opening, the photomask operable for use in a photolithographic process in which an image of the opening is transferred to a wafer; and

a pellicle comprising:

a frame coupled to the photomask; and

an amorphous fluoropolymer thin film operable to transmit approximately ninety-nine percent (99%) of off-axis light at a particular wavelength such that during the photolithographic process in which light is transmitted at the particular wavelength through the opening in the photomask, through the thin film and onto the wafer to project an image of the photomask opening onto the wafer, wherein a portion of the transmitted light is diffracted by the photomask opening and passes through the thin film as off-axis light, the approximate 99% transmission of such off-axis light produces an increased resolution of the image of the opening projected onto the wafer.

18. (Previously Presented) The system of Claim 17, further comprising the thin film including an optical thickness greater than a design thickness by less than or equal to approximately one-quarter of the particular wavelength, the design thickness comprising a thickness of the thin film that maximizes transmission of light incident to the thin film at a normal angle at the particular wavelength.

19. (Previously Presented) The pellicle of Claim 17, further comprising the thin film enabling an associated peak in transmittance for normal incidence light at a wavelength of less than approximately twenty nanometers above the particular wavelength.

20. (Previously Presented) The system of Claim 17, further comprising an anti-reflective coating disposed on a top surface and a bottom surface of the thin film, the anti-reflective coating including a thickness between approximately one-quarter of the particular wavelength and approximately one-half of the particular wavelength.

21. (Previously Presented) The pellicle of Claim 20, further comprising the thin film enabling an associated a peak in transmittance for normal incidence light at a wavelength of less than approximately twenty nanometers above the particular wavelength.

22. (Original) The system of Claim 20, wherein the anti-reflective coating includes a first refractive index approximately equal to the square root of a second refractive index associated with the thin film.

23. (Original) The system of Claim 17, further comprising a plurality of adjoining anti-reflective coatings disposed on a top surface and a bottom surface of the thin film, each of the anti-reflective coatings including a different refractive index.

24. (Original) The system of Claim 17, wherein the frame comprises aluminum.

25. (Cancelled)

26. (Previously Presented) A method for performing photolithography, comprising:

forming an amorphous fluoropolymer thin film including an optical thickness, the optical thickness being greater than a design thickness by an amount less than or equal to approximately one-quarter of a particular wavelength such that transmission of light through the thin film at the particular wavelength at an angle of incidence greater than zero is substantially maximized, the design thickness comprising a thickness of the thin film that maximizes transmission of light incident to the thin film at a normal angle at the particular wavelength;

attaching the thin film to a frame to form a pellicle;

mounting the pellicle on a photomask including an opening;

exposing the pellicle and the photomask to radiant energy having the particular wavelength, the radiant energy being incident upon the pellicle at the angle of incidence greater than zero; and

projecting the radiant energy through the opening in the photomask, through the thin film and onto a wafer to form an image of the photomask opening on the wafer, wherein a portion of the projected light is diffracted by the photomask opening and passes through the thin film at the angle of incidence greater than zero for which the transmission of light through the film is substantially maximized, such that the thin film substantially maximizes projection of the diffracted portion of light onto the wafer due to the optical thickness of the thin film in order to increase the resolution of the image of the photomask opening projected on the wafer.

27. (Previously Presented) The method of Claim 26, further comprising coating a top surface of the thin film with an anti-reflective material, the anti-reflective material including a thickness between approximately one-quarter of the particular wavelength and approximately one-half of the particular wavelength.

28. (Original) The method of Claim 27, further comprising coating a bottom surface of the thin film with the anti-reflective material.

29. (Previously Presented) The pellicle of Claim 26, further comprising the thin film enabling an associated peak in transmittance for normal incidence light at a wavelength of less than approximately twenty nanometers above the particular wavelength.

30. (Original) The method of Claim 26, further comprising coating at least one of a top surface and a bottom surface of the thin film with a plurality of adjoining layers of anti-reflective material, each layer including a different refractive index.